

**Cookson Electronics**

A Division of Cookson Group plc

Page 1 of 6  
Revised 7/21/04  
Replaces 4/22/04  
Printed 1/25/05  
MSDS ID: FT002LF

# MATERIAL SAFETY DATA SHEET

**Cookson Electronics  
Assembly Materials**

4100 Sixth Avenue  
Altoona, PA 16602

(814) 946-1611

(814) 944-8094 fax

www.cooksonelectronics.com

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: LEAD FREE METAL SOLDER ALLOYS  
(OR8, FLO-TEMP, TRI-BAR, RIBBON, WIRE, BAR AND POWDER)

MANUFACTURER'S NAME: COOKSON ELECTRONICS ASSEMBLY MATERIALS GROUP  
ADDRESS: 4100 6th AVENUE

ALTOONA, PA 16602

TRANSPORT EMERGENCY #: CHEMTREC: 1-800-424-9300

BUSINESS PHONE: 1-814-946-1611

## 2. INGREDIENT AND EXPOSURE LIMIT INFORMATION

CHEMICAL NAME	CAS #	% W/W	OSHA PEL - TWA
TIN	7440-31-5	0 - 99.5	2.0mg/m3
SILVER	7440-22-4	0 - 25	0.01mg/m3
ANTIMONY	7440-36-0	0 - 40	0.5mg/m3
BISMUTH	7440-69-9	0 - 60	N/E
ZINC	7440-66-6	0 - 20	N/E
COPPER	7440-50-8	0 - 20	0.1mg/m3 (fume, CuO) 1.0 mg/m3 (dusts & mists as CU)
INDIUM	7400-74-6	0 - 95	0.1mg/m3
ALUMINIUM	7429-90-50	0 - 4	10mg/m3
GOLD	7440-57-5	0 - 80	N/E

PRODUCT CONTAINS ONE OR MORE OF THESE METALLIC ELEMENTS IN VARYING PERCENTAGES. SEE PRODUCT LABEL FOR EXACT COMPOSITION.

## 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: MODERATE EYE IRRITANT. WILL NOT BURN. TOXIC BY  
INHALATION. GASTROINTESTINAL TRACT IRRITANT. RESPIRATORY  
TRACT IRRITANT. CAUSES SKIN IRRITATION.

## HMIS RATING SYSTEM:

Health: 2 ; Flammability: 0 ; Reactivity: 0 ; Protection: B

## NFPA RATING SYSTEM:

Health: 2 ; Flammability: 0 ; Reactivity: 0

ROUTES OF ENTRY: INHALATION; INGESTION; SKIN CONTACT; EYE CONTACT;  
ABSORPTION.

TARGET ORGANS: BLOOD; DIGESTIVE TRACT; KIDNEYS; NERVOUS SYSTEM;  
RESPIRATORY SYSTEM; NASAL SEPTUM; HEART; LIVER; EYES

MEDICAL CONDITIONS AGGRAVATED: DIGESTIVE TRACT DISEASE; KIDNEY DISEASE

IMMEDIATE (ACUTE) SYMPTOMS OVER-EXPOSURE BY ROUTE OF EXPOSURE:

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Page 2 of 6  
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### 3. HAZARDS IDENTIFICATION (Cont.)

INHALATION: CAN CAUSE MODERATE RESPIRATORY IRRITATION, DIZZINESS, WEAKNESS, FATIGUE, NAUSEA AND HEADACHE.  
EYES: CAN CAUSE MODERATE IRRITATION, TEARING AND REDDENING, BUT NOT LIKELY TO PERMANENTLY INJURE EYE TISSUE.  
SKIN CONTACT: CAN CAUSE SLIGHT IRRITATION.  
INGESTION: IRRITATING TO MOUTH, THROAT, AND STOMACH. CAN CAUSE ABDOMINAL DISCOMFORT, NAUSEA, VOMITING AND DIARRHEA.

LONG TERM (CHRONIC) HEALTH EFFECTS:

REPRODUCTION: SEE SECTION 11 OF THIS MSDS.  
MUTAGENICITY: SEE SECTION 11 OF THIS MSDS.

### 4. FIRST AID MEASURES

SKIN EXPOSURE: WASH WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND LAUNDRY. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS OR PERSISTS.  
EYE EXPOSURE: FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 20 MINUTES RETRACTING EYELIDS OFTEN. TILT THE HEAD TO PREVENT CHEMICAL FROM TRANSFERRING TO THE UNCONTAMINATED EYE. GET IMMEDIATE MEDICAL ATTENTION.  
INHALATION: REMOVE TO FRESH AIR. IF BREATHING IS DIFFICULT, HAVE A TRAINED INDIVIDUAL ADMINISTER OXYGEN. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION AND HAVE A TRAINED INDIVIDUAL ADMINISTER OXYGEN. GET MEDICAL ATTENTION IMMEDIATELY.  
INGESTION: SEEK MEDICAL ATTENTION IMMEDIATELY.  
NOTES TO DOCTOR: NO ADDITIONAL FIRST AID INFORMATION AVAILABLE

### 5. FIRE FIGHTING MEASURES

FLAMMABILITY SUMMARY: NOT COMBUSTIBLE  
FLASH POINT: N/A  
AUTOIGNITION TEMPERATURE: N/E  
EXPLOSIVE LIMITS % IN AIR: N/E

FIRE FIGHTING METHODS: WILL NOT BURN, NO SPECIAL INSTRUCTIONS AVAILABLE. USE METHODS APPROPRIATE FOR SURROUNDING MATERIALS.

HAZARDOUS COMBUSTION PRODUCTS: METAL FUMES; TOXIC FUMES.



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Page 3 of 6  
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## 6. ACCIDENTAL RELEASE MEASURES

PRECAUTIONS AND EQUIPMENT: EXPOSURE TO THE SPILLED MATERIAL MAY BE IRRITATING OR HARMFUL. FOLLOW PERSONAL PROTECTIVE EQUIPMENT RECOMMENDATIONS FOUND IN SECTION VIII OF THIS MSDS.

METHODS FOR CLEAN-UP: WEAR COMPLETE AND PROPER PERSONAL PROTECTIVE EQUIPMENT FOLLOWING THE RECOMMENDATION OF SECTION VIII GATHER AND STORE IN A SEALED CONTAINER PENDING A WASTE DISPOSAL EVALUATION. DO NOT USE BROOM OR AIR CLEANING ETC.

## 7. HANDLING AND STORAGE

HANDLING MEASURES: HARMFUL OR IRRITATING MATERIAL. AVOID CONTACTING AND AVOID BREATHING THE MATERIAL. USE ONLY IN A WELL VENTILATED AREA.

AS WITH ALL CHEMICALS, GOOD INDUSTRIAL HYGIENE PRACTICES SHOULD BE FOLLOWED WHEN HANDLING THIS MATERIAL. AVOID CONTACT WITH MATERIAL, AVOID BREATHING DUSTS OR FUMES, USE ONLY IN A WELL VENTILATED AREA. WASH THOROUGHLY AFTER HANDLING; WASH HANDS BEFORE EATING; DO NOT GET IN EYES, ON SKIN AND CLOTHING; MINIMIZE DUST GENERATION AND ACCUMULATION; REMOVE CONTAMINATED CLOTHING AND WASH BEFORE REUSE.

STORAGE MEASURES: NO SPECIAL REQUIREMENTS  
STORE IN A TIGHTLY CLOSED CONTAINER; KEEP AWAY FROM FOOD AND DRINKING WATER. STORE IN A COOL DRY PLACE; KEEP AWAY FROM HEAT, SPARKS, AND FLAME

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

ENGINEERING MEASURES: USE LOCAL EXHAUST VENTILATION OR OTHER ENGINEERING CONTROLS TO MINIMIZE EXPOSURES AND MAINTAIN OPERATOR COMFORT.

ENGINEERING CONTROLS MUST BE DESIGNED TO MEET THE OSHA CHEMICAL SPECIFIC STANDARD IN 29 CFR 1910. VENTILATION IS REQUIRED TO MAINTAIN OPERATOR EXPOSURE BELOW PUBLISHED EXPOSURE LIMITS. USE PROCESS ENCLOSURES, LOCAL EXHAUST VENTILATION, OR OTHER ENGINEERING CONTROLS TO CONTROL AIRBORNE LEVELS BELOW RECOMMENDED EXPOSURE LIMITS.

RESPIRATORY PROTECTION: RESPIRATORY PROTECTION MAY BE REQUIRED TO AVOID OVEREXPOSURE WHEN HANDLING THIS PRODUCT. GENERAL OR LOCAL EXHAUST VENTILATION IS THE PREFERRED MEANS OF



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Page 4 of 6  
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## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION (Cont.)

PROTECTION. USE A RESPIRATOR IF GENERAL ROOM VENTILATION IS NOT AVAILABLE OR SUFFICIENT TO ELIMINATE SYMPTOMS.

FOLLOW A RESPIRATORY PROTECTION PROGRAM THAT MEETS 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS WHENEVER WORK PLACE CONDITIONS WARRANT THE USE OF A RESPIRATOR. WEAR A NIOSH APPROVED RESPIRATOR IF ANY EXPOSURE IS POSSIBLE.

### EYE PROTECTION:

WEAR CHEMICALLY RESISTANT SAFETY GLASSES WITH SIDE SHIELDS WHEN HANDLING THIS PRODUCT. DO NOT WEAR CONTACT LENSES.

### SKIN PROTECTION:

WEAR GOGGLES AND A FACE SHIELD  
WEAR PROTECTIVE GLOVES. INSPECT GLOVES FOR CHEMICAL BREAK-THROUGH AND REPLACE AT REGULAR INTERVALS. CLEAN PROTECTIVE EQUIPMENT REGULARLY. WASH HANDS AND OTHER EXPOSED AREAS WITH MILD SOAP AND WATER BEFORE EATING, DRINKING, AND WHEN LEAVING WORK  
WHERE CONTACT IS LIKELY, WEAR CHEMICAL RESISTANT GLOVES, A CHEMICAL SUIT, RUBBER BOOTS, AND CHEMICAL SAFETY GOGGLES PLUS A FACE SHIELD

### CONTROL PARAMETERS:

#### CHEMICAL NAME

TIN

SILVER

ANTIMONY

BISMUTH

ZINC

COPPER

INDIUM

#### -----ACGIH EXPOSURE LIMITS-----

TLV-TWA	STEL	CEILING
2 mg/m3 TWA		
0.1mg/m3		
0.5mg/m3 TWA		
N/E		
N/E		
1 mg/m3		
0.1mg/m3 (as copper fume)		
0.1mg/m3		

## 9. PHYSICAL AND CHEMICAL PROPERTIES

COLOR:

GREY

ODOR:

NONE

pH:

N/A

SOLUBILITY IN WATER:

NEGLIGIBLE; 0-1%

OTHER PHYSICAL AND CHEMICAL PROPERTIES DEPEND ON ALLOY COMPOSITION.

## 10. STABILITY AND REACTIVITY

DECOMPOSITION PRODUCTS:

METAL FUMES; TOXIC FUMES.

INCOMPATIBLE MATERIALS:

PEROXIDES; METALS; STRONG ACIDS; STRONG OXIDIZING AGENTS; STRONG REDUCING AGENTS; ACIDS; CHLORINE;



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Page 5 of 6  
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## 10. STABILITY AND REACTIVITY (Cont.)

CONDITIONS TO AVOID: MOISTURE; STRONG ALKALIES  
NONE KNOWN  
CONTAMINATION; CONTACT WITH AIR. CONTACT WITH  
WATER

## 11. TOXICOLOGICAL INFORMATION

INHALATION AND INGESTION: INGESTION OF DUST OR FUME MUST BE AVOIDED.

ANTIMONY: ANTIMONY IS TOXIC AND DUST OR FUME CAN CAUSE NASAL SEPTAL  
ULCERATION AND STOMACH LINING IRRITATION, SLEEPLESSNESS,  
IRRITABILITY AND MUSCULAR PAIN.

TIN: TIN IS NOT REGARDED AS TOXIC BUT EXCESSIVE EXPOSURE CAN  
CAUSE FEVER, NAUSEA, STOMACH CRAMPS OR DIARRHEA.  
EXPECTED TO BE SIGNIFICANT IN COMPARISON WITH OTHER  
METALS PRESENT. DUST OR FUME MAY CAUSE IRRITATION OF  
THE SKIN AND MUCOUS MEMBRANES AND MAY RESULT IN A BENIGN  
PNEUMOCONIOSIS (STANNOSIS).

COPPER: COPPER DUST AND FUME AFFECT THE RESPIRATORY SYSTEM, LUNGS  
SKIN, LIVER AND EYES.

ZINC & BISMUTH: ZINC AND BISMUTH ARE NOT CONSIDERED HAZARDOUS.  
BUT BISMUTH MAY CAUSE FOUL BREATH, A BLUE-BLACK LINE ON  
THE GUMS AND STOMATITIS.

SILVER: SILVER MAY CAUSE DISCOLORATION OF EYES AND SKIN (ARGYRIA)

INDIUM: INDIUM IS NOT REGARDED AS TOXIC BUT EXCESSIVE EXPOSURE  
CAN CAUSE FEVER, NAUSEA, STOMACH CRAMPS OR DIARRHEA,  
WEIGHT LOSS, PULMONARY EDEMA, BLOOD DAMAGE AND  
DEGENERATIVE CHANGES IN LIVER AND KIDNEYS.

ALUMINUM: INGESTION OF DUST FUME MAY IRRITATE THE LINING OF THE  
STOMACH WITH SYMPTOMS OF FEVER, CRAMPS OR DIARRHEA.

## 12. ECOLOGICAL INFORMATION

OVERVIEW: ECOLOGICAL HAZARD. IN HIGH CONCENTRATIONS, THIS PRODUCT MAY  
BE DANGEROUS TO PLANTS AND/OR WILDLIFE.

## 13. DISPOSAL CONSIDERATIONS

WASTE DESCRIPTION: RETURN TO SUPPLIER TO BE RECYCLED FOR METAL UNIT VALUE.  
SPENT OR DISCARDED MATERIAL IS PROBABLY A HAZARDOUS WASTE.  
DISPOSAL METHODS: DISPOSE OF IN ACCORDANCE WITH FEDERAL, STATE, LOCAL OR  
PROVINCIAL LAWS AND REGULATIONS.



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Page 6 of 6  
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### 14. TRANSPORT INFORMATION

SHIPPING BASIC DESCRIPTION: DOT & IATA: NOT RESTRICTED UNLESS IN FINE PARTICLE SIZE LESS THAN 0.004 INCHES IN DIAMETER. DEPENDS ON ALLOY. CONSULT LABEL OR MANUFACTURER FOR ADDITIONAL INFORMATION.

### 15. REGULATORY INFORMATION

TSCA STATUS: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY OF EXISTING CHEMICAL SUBSTANCES.

REGULATED CHEMICALS:

CHEMICAL NAME		REGULATION
SILVER	7440-22-4	SARA 313
ANTIMONY	7440-36-0	SARA 313
ZINC	7440-66-6	SARA 313
COPPER	7440-50-8	SARA 313

### 16. OTHER INFORMATION

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Additionally, Alpha Metals, Inc. assumes no responsibility for injury to the vendee or third persons proximately caused by the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.